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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,974	01/24/2006	Christian Hesse	14219-093US1 P2003.0036 U	7920
26161	7590	12/08/2009	EXAMINER	
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022				
DAHIMENE, MAHMOUD				
ART UNIT		PAPER NUMBER		
1792				
NOTIFICATION DATE		DELIVERY MODE		
12/08/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

### Office Action Summary

**Application No.**

10/542,974

**Applicant(s)**

HESSE, CHRISTIAN

**Examiner**

MAHMOUD DAHIMENE

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 and 9-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/22)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7 and 9-15 would be rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto et al. (US 2002/0089065) in view of Ito et al. (2002/0011919) or Fujii et al. (US 6, 475, 604), or Inoue et al. (US 6,172,592), as evidenced by Shankoff (US 3,839,110).

In a method for forming a device, Fujimoto discloses forming a first electrode and a second electrode on a base body; the first electrode at a location opposite the second electrode on the base body; chemically etching at least a portion of the base body to adjust the resistance of the base body to a predetermined value using nitric, sulfuric or phosphoric acids. See abstract, [0029] [0031], Figures 1A and 1B. Table 1.

Fujimoto teaches measuring the resistance of the base body before and after the chemical etch (for example, Table 1). Fujimoto ([0041]) teaches that when a thermistor chip is dipped in the solvent (e.g., sulfuric acid, paragraph 31, line 5) , its thermistor

body becomes smaller as a whole during etching, causing the resistance value to increase.

It is noted that Fujimoto does not indicate that the first and second electrodes are made for a material that is not etched by the etching solution or that is etched, by the etching solution, less than the base body is etched by the etching solution. The disclosure of Fujimoto is not limited to any material for electrodes.

Ito et al. (for examples, paragraphs 0024, 0060) or (Fujii et al. (col. 20, lines 6-10) and Inoue et al. (col. 5, lines 0-21)) are relied on to show that silver, nickel, tin, palladium and alloy of these metals are commonly used for the electrodes of thermistor.

Therefore, it would have been obvious to one with ordinary skilled in the art, at the time the invention was made, to use silver, nickel, tin, palladium and alloy of these metals as electrodes in Fujimoto in order to provide good electrical conductivity and small contact resistance as stated in Ito et al. (for example, 0060).

One of ordinary skill in the art would have been motivated to modify the method of Fujimoto as stated above, in order to provide good electrical conductivity and small contact resistance as stated in Ito et al. (for example, 0060).

In addition Fujimoto teaches "the time for dipping is made shorter for those thermistor chips having relatively higher resistance values and belonging to higher ranks such as Ranks 5 and 6 such that only small portions of their thermistor bodies will be melted away and the increase in their resistance values will be accordingly smaller. Those thermistor chips in Rank b7 are not required to be dipped in the solvent 10 because their resistance values are already close enough to the target resistance

value." (paragraph 0041). In other words Fujimoto teaches the melting (which is considered as etching when acid etching is used) and the etched amount are adjustable result effective variables depending on the type of thermistor.

It would have been obvious to one with ordinary skilled in the art to use commonly used materials for body and electrodes of thermistor because Fujimoto does not impose any limitation on the materials used for the body and/or the material used for the electrode. Some of the electrode materials disclosed in the prior art of record, such as palladium for example, would be etchable at a lower rate than the body material because etching such metals requires an oxidizing agent as evidenced by Shankoff (US 3,839,110) (abstract). Fujimoto is silent about any oxidizing agent.

The limitations of claims 1 and 10-15 have been addressed above and rejected for the same reasons, *supra*.

As to dependent claim 2, Fujimoto discloses that the base body comprises a ceramic material, see, for example, [0029].

As to dependent claim 3, see [0029] and [0045].

As to claim 5, Fujimoto discloses, in Fig. 6B, a case where the melted (etched) portion (36) of the body reaches electrodes (33), which suggests that the electrodes have been at least temporarily exposed to the etching solution at the corner of area (36) where it touches the electrodes corner, and since etch selectivity to the electrode is never perfect, one would expect the electrode to be etched as well but at a much slower rate. Applicant does not claim a specific etch selectivity to the electrodes. Applicant's own specification do not make a significant distinction between no etch or slow etch,

applicant discloses "contacts (21, 22) are made from a material that is not attacked by the etching solution or is attacked significantly less than the ceramic material"

(Applicant's specification (paragraph 0029)).

As to dependent claim 6, Fujimoto discloses immersing the base body in an etching liquid, such as sulfuric acid, see [0031].

As to dependent claim 7, see Table 1.

Fujimoto teaches that the portion of base body dissolved affects the resistance value [0031], Table 1. Claim 9 differs from Fujimoto by specifying various processing parameters (such as determine a difference between the predetermined valued and a measured value of the resistance and determining a duration for the etching). However, same were known to be result-effective variables and commonly determined by routine experiment. The process of conducting routine experimentations so as to produce an expected result is obvious to one of ordinary skill in the art. In the absence of showing criticality or new, unexpected results, a person having ordinary skill in the art would have found it obvious to modify the prior art by performing routine experiments (by using different process parameters) to obtain optimal result with a reasonable expectation of success.

Dependant claim 4 differs from Fujimoto by specifying various sizes and dimensions (e.g., less than about 3 mm). Because same are merely a matter of choices of design depending on the product requirements and the disclosure of Fujimoto is not limited to any size of the base body, in absence of showing criticality or unexpected

results, it would be obvious to one skilled in the art to use various dimensions in order to accommodate the specific product design and meet the product requirement.

### ***Response to Arguments***

1. Applicant's arguments filed 8/24/2009 have been fully considered but they are not persuasive.
2. Regarding applicant's argument stating "it would not have been obvious to make the electrodes from a material that is etchable, by the etching solution, substantially less than the base body is etchable by the etching solution. Because the electrodes of Fujimoto are not etched by the etching solution (because they are covered by either a resin or by a metal cover of the plating liquid), the use of the electrodes being made from a material that is etchable, by the etching solution, substantially less than the base body is etchable by the etching solution would be unnecessary and redundant." This argument is not persuasive because Fujimoto discloses, in Fig. 6B, a case where the melted (etched) portion (36) of the body reaches electrodes (33), which suggests that the electrodes have been at least temporarily exposed to the etching solution at the corner of area (36) where it touches the electrodes corner, and since etch selectivity to the electrode is never perfect, one would expect the electrode to be etched as well but at a much slower rate than the body. Applicant does not claim a specific etch selectivity to the electrodes. Applicant's own specification do not make a significant distinction between no etch or slow etch, applicant discloses "contacts (21, 22) are made from a

material that is not attacked by the etching solution or is attacked significantly less than the ceramic material" (Applicant's specification (paragraph 0029)).

3. As to applicant's argument stating that Fujimoto requires that electrodes are protected during the etching, the examiner notes that applicant's claims use the open language of "a method comprising" which does not exclude masking the electrodes.

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAHMOUD DAHIMENE whose telephone number is (571)272-2410. The examiner can normally be reached on week days from 8:00 AM. to 5:00 PM..



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. D./  
Examiner, Art Unit 1792

/Nadine G Norton/  
Supervisory Patent Examiner, Art Unit 1792